REMARKS

The Office action dated November 29, 2005, has been carefully reviewed and the foregoing amendment has been made in response thereto.

The drawings stand objected to under 35 C.F.R. 1.83(a) because the drawings do not show a feature enabling the flow control valve to rotate, as recited in Claim 3. Claim 3 has been canceled, thereby overcoming the basis for this objection.

Claims 1-10 stand rejected under 35 U.S.C. 103(a) as unpatentable over the Fujimura et al (5,860,797) in view of Yokota et al (6,041,883). The Office action acknowledges that the '797 patent does not disclose an electrical means connected to the flow control valve for sliding the control valve vary the size of inlet through the bypass port.

First, it is important to understand that the flow control device 14 of the '797 patent is a balance valve the position of whose spool is determined by the balance of hydraulic forces and a spring force applied to opposite ends of the spool 16. At the left hand side of spool 16, the force of a compression spring 17 and a feedback hydraulic fluid pressure are applied. At the right hand side of the spool, discharge hydraulic pressure produces a force, which is applied to the cross sectional area of the spool 16 when the load pressure is low and pressure force is developed on the land of spool 16 at the input pressure chamber 24. This pressure force exceeds the force of spring 17 and the feedback pressure in passage 1c, thereby causing spool 16 to move to the left to open a connection between input port 1b and bypass port 1a. (See column 4, line 55 - column 5, line 19.

When load pressure is increased, for example, when the operator moves the steering wheel with the vehicle at low speed, spool 16 moves to the right, thereby closing the connection between the input port and the bypass port. (See column 5, lines 20-47).

From this it can be seen that when low pressure increases, sleeve member 19 moves to the left against spring 20, thereby elongating a tubular passageway 22. The increased pressure in the pressure reducing chamber 23, which is fed back through

passage 1c moves valve 16 to the right, thereby reducing fluid flow to the bypass port 1a. Sleeve 19 moves to the left when spool 16 moves to the right to reduce flow in the bypass. In this way, the '797 patent controls the opening of the bypass port 1a in accordance with the magnitude of pressure in the discharge chamber 25 or in the input pressure chamber 24.

In addition, pressure fed back through passage 1c operates to balance the valve and to add to the force of spring 17. The Office actions says that the '797 patent fails to teach a "tubular extension sealing mounted onto the housing at said second bore end." The second and third sentences of Paragraph 5 of the Office action make it difficult for the applicant to know what the Office action is saying about the '797 patent. In any case, the Office action says in Paragraph 6 that the '883 patent teaches a tubular extension mounted onto the housing at the second bore end.

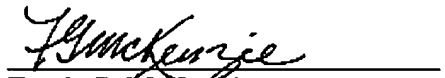
The Office action says it would have been be obvious to one of ordinary skill at the art at the time of the invention to modify the device of the '797 patent to incorporate the electromagnetic coil of Yokota et al. operably connected to the plunger. Applicant respectfully disagrees with this conclusion. The '797 patent teaches specifically hydraulic feedback control of the position of the plunger and valve spool. As opposed to that, the '883 patent teaches electromagnetic control of the spool position. Electromagnetic control and hydraulic control of a balance valve are incompatible with respect to a technique for controlling the position of the spool valve. A hydraulic balance valve relies entirely on pressure forces and a spring force to establish the spool position and the degree to which the bypass port is opened. A solenoid-operated valve relies on software logic or electronic circuit logic to energize the solenoid with a variable electric current that controls the position of the spool in the bore.

There is no basis, suggestion or teaching why a person skilled in the art would apply electromagnetic control to the valve spool of the '797 device. Furthermore the Office action has made no indication of how the two devices of the cited references could be combined to control the valve spool. Somehow the hydraulic control features, such as the three spring, the hydraulic pressure feedback passage, and

provision for hydraulic pressure forces would have to be deleted, and replaced with electromagnetic techniques, without reference to the present invention. The '797 patent teaches a way from electromagnetic control of the position of spool16, and cannot be combined with electromagnetic control of the same component.

The Office action fails to establish a prima facie case for rejecting the claims of this application by combining the '797 patent with the '883 patent. In view of these remarks and amendments, the claims of this application appear now in condition for allowance. Favorable action is respectfully solicited.

Respectfully submitted,



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